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DOCUMENT-IDENTIFIER: US 6417933 B1
TITLE: Teleconferencing and facsimile communications system and method

Brief Summary Text (5):
Similar to teleconferencing, facsimile communications allow remote parties to efficiently exchange information in the form of an image through telephone connections. Services based on facsimile communications have emerged and include, for example, facsimile distribution and facsimile mailbox services. In accordance with the facsimile distribution service, a predefined list of facsimile numbers of parties for whom facsimile information is intended is stored in a server. The latter broadcasts the facsimile information when it is ready according to the stored list. On the other hand, in accordance with the facsimile mailbox service, the facsimile information is first stored in a repository. A recipient afterwards can conveniently call a given number to retrieve the facsimile information from the repository.

Detailed Description Text (2):
FIG. 1 illustrates communications system 100 embodying the principles of the invention for conducting teleconferences and handling facsimile communications associated therewith. In this particular illustrative embodiment, teleconference attendees utilize standard telephone equipment 101-1 through 101-k to hold a teleconference among themselves, where k is an integer greater than one. To that end, each attendee accesses teleconferencing server 103 through public switched telephone network (PSTN) 105 by calling a pre-assigned phone number associated with server 103. In addition, some, if not all, of the attendees have access to facsimile equipment, and their respective pieces of the equipment are denoted 102-1 through 102-p, where p is an integer. These pieces of facsimile equipment may also access server 103 through PSTN 105.

Detailed Description Text (4):
Processor 110 also creates an attendance table for each teleconference, which is stored in memory 132. This attendance table is illustrated in FIG. 2. As shown in FIG. 2, the attendance table is identified by the conference access code and contains information about each of N attendees who were invited to participate in the conference, where N>1. For example, the names, office phone numbers, office facsimile numbers, email addresses, mailing addresses of the respective attendees are recorded in the table. Such attendee information, along with the conference scheduling information, is communicated by a conference organizer to processor 110 in setting up the teleconference. If server 103 is used for conducting a teleconference attended by members of a particular organization, and the organization has a database containing contact information for each organization member, it will be appreciated that processor 110 can access such a database to fill in the attendance table with the attendee information derived therefrom, as long as the attendees are identified by one of their attributes such as their office phone numbers.

Detailed Description Text (9):
Email processor 139 is connected to email network 161, which may be the Internet, PSTN, or a private or public wired or wireless network. Email processor 139 is capable of receiving email messages, parsing contents of the messages in a predefined format to find special commands, and communicating with other components of teleconferencing server 103 to effect any such commands. Processor 139 is also capable of generating and transmitting status messages back to the email originator

as a result of processing these commands or in response to events occasioned by other components in server 103. Email processor 139 is further capable of separating attached files from incoming email messages, feeding these files to such a software application as to convert their contents into facsimile images, and storing the converted files in memory 156 in facsimile bridge 150 for distribution. Conversely, email processor 139 can distribute the facsimile images stored in memory 156 by formatting these images into an appropriate file, attachable to or forming part of an email message directed to an attendee.

Detailed Description Text (10):
On-line communications processor 141 is connected to on-line network 163 which may be the Internet or a private or public data network. Processor 141 enables an attendee to communicate with server 103 in real time through network 163 using a standard personal computer (PC) or terminal with a modem. For example, with an appropriate browser interface or software on the PC, or standard command line inputs to the terminal, an attendee can interact with server 103. Specifically, the on-line attendee can enter commands and query status regarding facsimile distribution from server 103. Moreover, in a well-known manner, processor 141 is capable of converting facsimile images for screen display. Thus, the on-line attendee can also receive facsimile images stored in memory 156 through processor 141 on to his/her PC or terminal screen.

Detailed Description Text (11):
Paging communications processor 143 is connected to paging network 165. With processor 143, server 103 can communicate messages to attendees' pagers regarding statuses of facsimile transmission. One such status may indicate an availability of facsimiles to be distributed. With a two-way pager, an attendee who chooses not to participate in the teleconference can transmit commands to processor 143 through network 165, which enable the attendee to exercise certain controls over, say, the disposition of facsimile materials submitted during the teleconference. For example, upon obtaining on the pager the status message that facsimile data is ready to be distributed to the attendee, the attendee may respond using the pager to request server 103 to delay or redirect the distribution.

Detailed Description Text (24):
Otherwise if at step 227 the attendee chooses to receive any facsimile transmission status information, unit 134 conveys an affirmative indication to facsimile bridge 150 where such an indication is stored in the attendee's database in memory 156, as indicated at step 230. Routine 200 thence proceeds to step 233. Unit 134 at step 233 inquires whether the attendee wants to receive conference presentation materials even though these materials were transmitted to him/her earlier. If the attendee responds affirmatively, unit 134 sends a control message to processing unit 152. Accordingly, unit 152 retrieves the presentation materials stored in memory 156, and causes the materials to be transmitted through facsimile modem pool 154 using the facsimile number just provided by the attendee, as indicated at step 236. Routine 200 then advances to step 239. If the attendee responds negatively at step 233, routine 200 skips step 236 and ends up at step 239 as well.

Detailed Description Text (25):
Again, through unit 152, unit 134 knows whether there are any new materials, e,g., changes in the presentation materials and last minute materials, recently deposited in memory 156. If such materials exist, unit 134 at step 239 announces to the attendee that the new materials are being facsimile-transmitted to the attendee. At the same time, unit 134 conveys a second control message to unit 152, effecting the facsimile transmission of the materials. Routine 200 thence proceeds to step 218 in FIG. 3B.

Detailed Description Text (29):
In accordance with another feature of the invention, at the time of submission the facsimile originator may specify to facsimile bridge 150 the minimum clearance level of the intended recipients of the submitted materials. For example, such a clearance level may be written at a predetermined location on a facsimile cover sheet. Upon receipt of the submitted materials, along with the cover sheet, unit 152 recognizes using. a standard character recognition algorithm the written minimum clearance level associated therewith. Before facsimile-transmitting such materials to any

attendee, unit 152 checks the attendance table of FIG. 2 for the clearance level of the attendee. Attendees with a clearance level lower than the minimum level are denied access to the materials.

Detailed Description Text (30):
It should be noted that unit 134 at step 251 may also give out an email address associated with email processor 139 for submission of materials during the teleconference. Thus, instead of facsimile-transmitting the materials to facsimile bridge 150, an attendee could send an email message to processor 139 with the submitted materials forming part of or an attached file to the message. Upon receipt of the email message, email processor 139 in a standard way converts the materials to facsimile images for distribution.

Detailed Description Text (34):
In this illustrative embodiment, an initialization process similar to routine 200 is alternatively available for an attendee to complete using an on-line terminal. Unlike routine 200 which is voice interactive, the on-line initialization process is menu driven. As another alternative, an attendee may complete the initialization process by sending processor 139 an email message containing necessary information in a predefined format. In either event, after the initialization process is complete, if the attendee wants to participate in the teleconference, the attendee can call voice bridge 130 at the pre-assigned number. The attendee then only needs to enter the conference access code and security code to join the conference in accordance with routine 200, bypassing the rest of the routine.

Detailed Description Text (35):
During the teleconference, an attendee may want to change the facsimile numbers and/or facsimile schedule previously communicated to voice bridge 130 as he/she may be relocated. Such changes can be realized by entering the corresponding DTMF command sequences on touch-tone telephone equipment. Taking advantage of the word spotting capability of user interface 140, the attendee can also achieve those changes by uttering specified control words into the receiver of the telephone equipment. Moreover, instead of using telephone equipment, the attendee can use an on-line terminal or rely on an email message to communicate to server 103 the above command and control information. In any event, in response to the attendee's initiation of changes, only part of routine 200 including steps 221, 224, 227, 230 and 233 (or its equivalent in the case of the on-line terminal) is reactivated. Accordingly, the attendee can make the desired changes through the shortened routine.

Detailed Description Text (37):
During the teleconference, if the attendee wants to halt the transmission of facsimiles to him/her as the facsimile equipment perhaps needs to be made available for more urgent incoming materials, the attendee may enter a predetermined DTMF command sequence on the telephone equipment (or otherwise using an on-line terminal or by email message) to stop the transmission. In response, unit 152 causes the outstanding facsimiles to be queued in memory 156 for later transmission. As the facsimile equipment becomes available, the attendee can enter a second predetermined DTMF command sequence or otherwise to resume the facsimile transmission.

Detailed Description Text (42):
For example, in the disclosed embodiment, server 103 illustratively distributes materials by facsimile. Alternatively, an attendee may direct server 103 to distribute some or all of such materials as attached files to an email message to the attendee.

Detailed Description Text (44):
In addition, it will be appreciated that the materials submitted to facsimile bridge 150 for distribution may be made available by an on-line service via the Internet for example. An attendee may access a designated home page using an on-line terminal to view and/or retrieve the facsimile images. Such access may require a login ID and password.

Detailed Description Text (45):
Further, in the disclosed embodiment, status information on an availability of

submitted materials for facsimile distribution is accessible by an attendee. It will be appreciated that such information will be followed by information such as the name of the submitter, number of pages, etc. Based on this additional information, the attendee will be able to efficiently dispose of the distribution. For example, the attendee will be able to request server 103 having the above printing facility to print and deliver some or all of the materials when the number of pages is large. The attendee will also be able to request server 103 to delay facsimile transmission of materials from certain submitters in favor of other submitters. Furthermore, such additional information can readily be formatted into a pager message which is transmitted, along with the choices of disposition of the facsimile materials selectable by a two-way pager. Based on this message, an attendee can use his/her two-way pager to select the desired disposition choice and communicate the selection to server 103.

CLAIMS:

1. Server apparatus for conducting a teleconference attended by a plurality of attendees comprising:

an interface for establishing a communication connection over a communication network with at least one attendee to conduct said teleconference;

a facsimile controller for distributing facsimile data associated with said teleconference; and

a processor element for eliciting from the at least one attendee during at least a portion of the teleconference, through said communication connection, information concerning a manner in which said facsimile data is distributed to the at least one attendee, said information being conveyed to said facsimile controller, which subsequently distributes said facsimile data to the at least one attendee based on said information.

28. A system for conducting a teleconference attended by a plurality of attendees comprising:

a plurality of communication devices;

an interface for establishing a communication connection over a communication network with at least one attendee using one of the communication devices to conduct said teleconference;

a facsimile controller for distributing facsimile data associated with said teleconference; and

a processor element for eliciting from the at least one attendee during at least a portion of the teleconference, through said communication connection, information concerning a manner in which said facsimile data is distributed to the at least one attendee, said information being conveyed to said facsimile controller, which subsequently distributes said facsimile data to the at least one attendee based on said information.

33. A method for conducting a teleconference attended by a plurality of attendees comprising the steps of:

establishing a communication connection through a communication network with at least one attendee to conduct said teleconference;

eliciting from the at least one attendee during at least a portion of the teleconference, through said communication connection, information concerning a manner in which facsimile data is distributed to the at least one attendee; and

distributing said facsimile data to the at least one attendee based on said information.